

Question 3

Cyclone Software Co. is trying to establish its optimal capital structure. Its current capital structure consists of 25% debt and 75% equity, however, the CEO believes that the firm should use more debt eminent from the fact that it is considered to be the cheapest source of finance. According to him the only factor which will increase WACC as a result of higher debt is if the company raises debt at a cost higher than cost of equity, which can never be the case in his opinion. He was having a discussion with some of his counterparts, where he argued that the reason cost of equity changes is changes in dividend policy or price changes and is not affected by changes in capital structure.

Currently, Cyclone's cost of equity is 14%. The company issued Rs. 100, 6-year 8% long-term debt instruments a year back, which are currently trading at Rs. 92.42

The risk-free rate, r_{RF} , is 5%; the market risk premium, RPM, is 6%; and the firm's tax rate is 40%. Currently, Cyclone's cost of equity is 14%, which is determined by the CAPM.

- a) Determine existing WACC of the company.
- b) What would be Cyclone's estimated cost of equity if it changed its capital structure to 50% debt and 50% equity?
- c) Based upon the Cost of Equity calculated in b) determine the revised WACC for the company and comment as to how it affected the WACC.
- e) Being a financial management expert, draft a report to the CEO elaborating as to why changes in capital structure resulted in different cost of equity? In your write highlight areas to give an understanding about debt's proportion in capital mix.

Solution:

- a) Determine existing WACC

We know the Capital Structure is 25% debt & 75%, so weightages for the equation is known. What we need is the cost of both debt and equity.

For COST OF DEBT

Since no information on new/fresh debt is given, we will have to calculate the YTM of existing debt in order to determine the Cost of Debt.

Coupon Rate: 8%

Face Value: Rs. 100

Coupon or PMT: Rs. 8 (Rs. 100 x 8%)

N: 5 (since the total tenure is 6 and was issued 1 year ago, so 5 years remaining till maturity)

Market Value: Rs. 92.42

Now, since we know that the current market value is less than the face value, we can be sure enough that the “r” (or the YTM) has to be more than the coupon rate (*since current interest rate, i.e. the “r” is higher, theoretically makes our bond less attractive, that’s why the market value is less than the face value*)

$$\text{Bond Price} = \text{Cashflow} * \frac{1 - \left(\frac{1}{(1 + \text{interest rate})^n} \right)}{\text{interest rate}} + \left[\text{Maturity Value} * \frac{1}{(1 + \text{interest rate})^n} \right]$$

$$92.42 = 8 \times \frac{1 - \left(\frac{1}{(1 + \text{interest rate})^5} \right)}{\text{interest rate}} + 100 \times \frac{1}{(1 + \text{interest rate})^5}$$

Using Trail & Error, the YTM is 10%.

So Kd is 10% (1-t)

Now for Ke, it is already provided as 14%, hence our WACC would be

$$\text{WACC} = 14\% (75\%) + 10\% (1-40\%) (25\%)$$

WACC = 12%

B) What would be the cost of equity, due to changes in capital structure?

We understand that changes in capital structure affects Risk (i.e. Beta), hence we will have readjust the beta. The company is already carrying debt (25%) means its existing is indeed Levered. So we will have to first Un-Lever it first.

Existing Beta is (finding it using CAPM).

$$14\% = 5\% + 6\% (\text{Beta})$$

$$\text{Beta} = 1.5$$

$$\text{Beta (Unlevered)} = \frac{\text{Beta (levered)}}{(1 + (1 - \text{tax}) \frac{\text{Debt}}{\text{Equity}})}$$

$$\text{Beta (Unlevered)} = \frac{1.5}{1 + (1 - 0.4) (25/75)}$$

$$\text{Beta (Unlevered)} = 1.25$$

Now, we will have to Re-Lever it using new Debt-Equity

$$\text{Beta (Unlevered)} = \frac{\text{Beta (levered)}}{(1 + (1 - \text{tax}) \frac{\text{Debt}}{\text{Equity}})}$$

$$1.25 = \frac{\text{Beta (Levered)}}{1 + (1 - 0.4) (50/50)}$$

$$\text{Beta} = 2.00$$

c)

We already know that Kd is = 10% (1-40%)

While Ke would now be,

$$K_e = 5\% + 6\% (2.00)$$

$$K_e = 17\%$$

$$\text{WACC} = 17\% (50\%) + 10\% (1 - 40\%) (50\%)$$

$$\text{WACC} = 11.50\%$$

D) Report to the CEO:

This report highlights the causes and effects on cost of equity due to changes in the capital structure. It is pertinent to note that, cost of equity (required return) derived through CAPM uses Beta as a measure of risk. Taking on debt (despite having benefits) exposes a firm to bankruptcy risk, hence changing the overall risk profile. When the risk of bankruptcy increase owing to higher level of debt, the return required by equity holders (that is the cost of equity) also increases.

Based on this concept, it would seem un-rationale for a company to raise debt than, whilst debt being cheaper than equity reduces the overall capital cost when a right proportion is maintained.

Even in our case, if you look at the company's previous capital structure, the cost of equity was 14%, while WACC was 12%. Due to changes in our capital structure (i.e. more debt was taken into account) the cost of equity increased to 17%, but since the proportion of cheaper financing (debt) increased, our overall cost reduced to 11.5%. This gives us a benefit of taking on more projects which in the long run be beneficial for the shareholders.